Journal of the Arkansas Academy of Science

Volume 34 Article 5

1980

64th Annual Meeting, 1980. Program

Academy Editors

PROGRAM
Arkansas Academy of Science

Sixty-Fourth Annual Meeting

ARKANSAS STATE UNIVERSITY
State University, Arkansas

Meeting concurrently with sessions of:

The Collegiate Academy of Science

Friday, 28 March

SENIOR AND COLLEGIATE ACADEMIES -- Registration

SENIOR ACADEMY -- Executive Board Meeting

COLLEGIATE BUSINESS MEETING I

SENIOR ACADEMY -- First General Business Meeting

WESTINGHOUSE SCIENCE TALENT SEARCH AWARDS

Lunch

SENIOR AND COLLEGIATE ACADEMIES -- Registration

SENIOR AND COLLEGIATE ACADEMIES -- Papers [Concurrent Sessions]:

- Chemistry
- Mathematics and Physics
- Biology I -- Botany
- Aquatic Environment I
- Science Education
- Geology

SENIOR AND COLLEGIATE ACADEMIES -- Banquet
Speaker: Senator Dale Bumpers

Saturday, 29 March

SENIOR AND COLLEGIATE ACADEMIES -- Registration

SENIOR AND COLLEGIATE ACADEMIES -- Papers [Concurrent Sessions]:

- Biology II -- Invertebrate Zoology
- Biology III -- Vertebrate Zoology
- Aquatic Environment II
- Hydrogeology
- Biomedical Science

SENIOR ACADEMY -- Second General Business Meeting

SECTION PROGRAMS

[Papers marked with * are presentations by Collegiate Academy members]

CHEMISTRY

Section Chairman: Alex Nisbet

*SYNTHESIS OF N-SUBSTITUTED ANALOGS OF ACYCLIC NARCOTIC ANALGESICS AS NARCOTIC ANTAGONISTS.
J. B. Richardson, P. K. Raible, D. L. Greene, and D. L. Lattin, Dept. of Biopharmaceutical Sciences, College of Pharmacy, University of Arkansas Medical Sciences Campus, Little Rock, Arkansas 72205.

*SYNTHESIS OF PENTAPEPTIDES AS MORPHINE AGONISTS AND ANTAGONISTS.
K. Lee Robinson, Lyle Van Arsdale, and A. Nelson Voldeng, College of Pharmacy, University of Arkansas Medical Sciences Campus, Little Rock, Arkansas 72205.

*THE CRYSTAL AND MOLECULAR STRUCTURE OF TRANS-TRANS-μ-CHLORO-μ-PYRAZOLATODICHLORO-BIS-(ETHYLENE) DIPLATINUM (II), $C1(C_2H_4)$ $PT(\mu-C1)$ $(\mu-C_3N_2H_3)$ $PT(C_2H_4)$ C1.
A. W. Cordes, W. C. Deese, and D. A. Johnson, Dept. of Chemistry, University of Arkansas, Fayetteville, Arkansas 72701.

THE HEMORRHAGIC FRACTION IV OF TIMBER RATTLESNAKE VENOM.
David J. Civello, Lan H. Duong, and Collis R. Geren, Department of Chemistry, University of Arkansas, Fayetteville, Arkansas 72701.

THE SYSTEMIC EFFECTOR FROM BROWN RECLUSE SPIDER VENOM.
James L. Babcock and Collis R. Geren, Department of Chemistry, University of Arkansas, Fayetteville, Arkansas 72701.

PARTIAL PURIFICATION AND CHARACTERIZATION OF A HEMORRHAGIN FROM TIMBER RATTLESNAKE VENOM.
Ellen Farr Young and Collis R. Geren, Department of Chemistry, University of Arkansas, Fayetteville, Arkansas 72701.

IMPLEMENTATION OF THE NASA CHEMICAL EQUILIBRIUM PROGRAM AT ARKANSAS STATE UNIVERSITY.
J. Edward Bennett, Paul D. Gwinup, and Wade Martin Simpson, Department of Chemistry, Arkansas State University, State University, Arkansas 72467.

REACTIONS OF HEX-1-ENOPYRAN-3—ULOSES WITH SOME ORGANOMETALLIC REAGENTS.
Thomas E. Goodwin, Byron Curtner, Jim Loomis, and Newton Seitzinger, Department of Chemistry, Hendrix College, Conway, Arkansas 72032.

A GLYCOPROTEIN PROTEINASE IN *AGKISTRODON BILINEATUS* VENOM.
John D. Ruff, Bob D. Johnson, and Dewey H. Sifford, Departments of Biology and Chemistry, Arkansas State University, State University, Arkansas 72467.

ISOLATION OF PHOSPHOLIPASE A_1 FROM *AGKISTRODON BILINEATUS* VENOM.
Karl H. Landberg, Bob D. Johnson, and Dewey H. Sifford, Departments of Biology and Chemistry, Arkansas State University, State University, Arkansas 72467.

CHARACTERIZATION OF COPPERHEAD VENOMS.
Jeffrey B. Moran and Collis R. Geren, Department of Chemistry, University of Arkansas, Fayetteville, Arkansas 72701.

AN EXPERIMENTAL SYSTEM FOR THE DETERMINATION OF VAPORIZATION KINETICS AND THERMODYNAMICS AT TEMPERATURES TO 3300°K.
J. Edward Bennett and Paul D. Gwinup, Department of Chemistry, Arkansas State University, State University, Arkansas 72467.

KETONE SYNTHESIS VIA THE SYNTHETIC EQUIVALENT OF A γ-ALKYLATION OF 1-ARYL-2-METHYL-2-PROPEN-1-OLS.
Thomas E. Goodwin and David Ratcliff, Department of Chemistry, Hendrix College, Conway, Arkansas 72032.

PHYSICS AND MATH

Section Chairman: Hal McCloud

THE F+ CENTER IN ZINC SULFIDE.
W. F. Wei, Dept. of Mathematics and Physics, Arkansas State University.

USE OF A POCKET CALCULATOR FOR REALTIME DATE PROCESSING.
Jeffrey O. Cohen and Hal E. McCloud, Dept. of Mathematics and Physics, Arkansas State University.

BOTANY AND AGRICULTURE

Section Chairman: Don Culwell

NOTES ON THE FUNGUS FLORA (GASTEROMYCETES) OF NORTHWEST ARKANSAS.
George T. Johnson, Department of Botany and Bacteriology, University of Arkansas at Fayetteville.

POLLEN STUDIES IN THE CESTREAE AND SALPIGLOSSIDEAE (SOLANACEAE).
Johnnie L. Gentry, Jr., University of Arkansas Museum at Fayetteville.

REMNANT PRAIRIE IN FAULKNER, COUNTY, ARKANSAS.
Donald E. Culwell, Department of Biology, University of Central Arkansas at Conway.

UNDERSTORY BIOMASS FOR ENERGY.
Timothy T. Ku and Charles R. Blinn, Department of Forestry, University of Arkansas at Monticello and James B. Baker, U.S. Forest Service, Southern Forest Experiment Station at Monticello.

PRELIMINARY ANALYSIS OF THE GLO TREE DATA FROM TOLTEC STATE PARK NEAR LITTLE ROCK.
Nancy G. McCartney, University of Arkansas Museum at Fayetteville.

VEGETATION COMMUNITIES OF THE CENTRAL MISSISSIPPI DELTA REGION AND THEIR RELATION TO FLOODING.
Edward E. Dale, Jr., Department of Botany and Bacteriology, University of Arkansas at Fayetteville, and R. T. Huffman, Environmental laboratory, Waterways Experiment Station, Corps of Engineers, Vickesburg, Mississippi.

PRELIMINARY REPORT ON THE FLORA OF INDEPENDENCE COUNTY, ARKANSAS.
Veryl V. Board, Health and Sciences program, Arkansas College at Batesville.

LITERATURE ON THE VEGETATION OF ARKANSAS: AN UPDATED LIST.
Bill Pell, The Nature Conservancy at Little Rock.

AN UPDATE ON THE NATURE CONSERVANCY'S ARKANSAS HERITAGE PROGRAM.
Ken Smith, Arkansas Heritage Program at Little Rock.

RESPONSE OF MAIZE TO TWO ROCK PHOSPHATE FERTILIZERS.
M. R. Majedi and L. F. Thompson, Department of Agronomy, University of Arkansas at Fayetteville.

A COMPARISON OF EARLY GROWTH AND SOIL ADAPTATION OF SELECTED BUSH *LESPEDEZA* SPP. (LEGUMINOSAE) ON SOILS OF NORTHEAST ARKANSAS.
S. A. Sewell and A. W. Tennille, Department of Biological Sciences and College of Agriculture at Arkansas State University.

A CHECKLIST OF ARKANSAS LICHENS.
Jewel E. Moore, Biology Department, University of Central Arkansas at Conway.

MORPHOLOGICAL VARIATION IN THE DIATOM *RHOPALODIA GIBBA* (EHRENBERG) MULLER.
David B. Czarnecki and Richard L. Meyer, Dept. of Botany and Bacteriology, University of Arkansas at Fayetteville and Dean W. Blinn, Dept. of Biological Science, Northern Arizona University at Flagstaff, Arizona.

SECONDARY SYMMETRY IN DIATOMS: TAXONOMIC IMPLICATIONS OF A CLONE OF AN ABERRANT *GOMPHONEMA SUBCLAVATUM* (GRUNOW) GRUNOW FROM NORTHWESTERN ARKANSAS.
Richard L. Meyer and David B. Czarnecki, Dept. of Botany and Bacteriology, University of Arkansas at Fayetteville.

AQUATIC ENVIRONMENT I
Section Chairman: John K. Beadles

INTENSIVE CULTURE OF THE WHITE AMUR BY THE USE OF CAGES.
Tommy G. Crawford and John K. Beadles, Arkansas State University, State University, Arkansas.

A PRECHANNELIZATION ICHTHYOFAUNAL SURVEY OF MAIN DITCH, RANDOLPH COUNTY, ARKANSAS.
Steve M. Bounds, Crowley's Ridge College.

INTERRENAL GLAND RESPONSE TO HYPOXIA IN THE CHANNEL CATFISH *(ICTALURUS PUNCTATUS)*.
J. R. Tomasso, K. B. Davis, and N. C. Parker, Memphis State University, Memphis, TN.

FOOD OF THE LARGEMOUTH BASS *(MICROPTERUS SALMOIDES)* IN DEGRAY RESERVOIR, ARKANSAS, 1976.
Horace Bryant and Thomas E. Moen, U.S. Fish and Wildlife Service, Arkadelphia, Arkansas.

EVALUATION OF A FUL-FAT SOYBEAN RATION FOR CHANNEL CATFISH PRODUCTION IN CAGES.
Scott H. Newton, Walter R. Robison and Calvin J. Haskins, University of Arkansas at Pine Bluff.

POTENTIAL OF UTILIZING SCRAP PROCESSED CHEESE AS A MAJOR CATFISH RATION COMPONENT.
Calvin J. Haskins and Scott H. Newton, University of Arkansas at Pine Bluff.

GROWTH AND YEAR-CLASS COMPOSITION OF WHITE BASS *(MORONE CHRYSOPS)* IN DEGRAY LAKE, ARKANSAS.
Thomas E. Moen and Michael R. Dewey, U.S. Fish and Wildlife Service, Arkadelphia, Arkansas.

GROWTH AND STANDING CROP OF LARGEMOUTH BASS *(MICROPTERUS SALMOIDES)* FROM LAKE ELMDALE.
Alex Zdinak, Jr., Raj V. Kilambi, Marvin Galloway, John D. McClanahan and Clark Duffe, University of Arkansas at Fayetteville.

PRELIMINARY REPORT ON THE BIOLOGY OF THE YELLOW-CHEEK DARTER, *ETHEOSTOMA MOOREI* RANEY AND SUTTKUS.
Roland E. McDaniel and George L. Harp, Arkansas State University, State University, Arkansas.

SCIENCE EDUCATION
Section Chairman: Neal Buffaloe

THE ORGANIZATION AND DEVELOPMENT OF A METHODS COURSE FOR SECONDARY SCIENCE MAJORS.
Earl L. Hanebrink, Arkansas State University, State University, Arkansas.

MODEL FOR DEMONSTRATION OF ORGANIC REACTION MECHANISMS.
Paul M. Nave, Arkansas State University, State University, Arkansas.

ASTRONOMY ACTIVITIES: AN EXCITING, FLEXIBLE ALTERNATIVE TO TRADITIONAL LAB SESSIONS.
Carl T. Rutledge, Southern Arkansas University, Magnolia, Arkansas.

INNOVATIVE LABORATORY EXERCISES FOR GENERAL BOTANY.
Robert D. Wright, Donald E. Culwell, and Jewel E. Moore, University of Central Arkansas, Conway, Arkansas.

AN APPRAISAL OF COLLEGE SCIENCE COURSES BY IN-SERVICE HIGH SCHOOL SCIENCE TEACHERS.
Robert T. Kirkwood, University of Central Arkansas, Conway, Arkansas.

A REPORT ON THE STATUS AND DISTRIBUTION OF THE RED-COCKADED WOODPECKER IN ARKANSAS.
Fred Burnside and Douglas James, University of Arkansas at Fayetteville.

STUDIES ON THE BIOLOGY OF THE STONEFLY NYMPH *NEOPHASGANOPHORA* SP. (PLECOPTERA) FROM NORTHWESTERN ARKANSAS.
James R. Briggs, College of the Ozarks, Clarksville, Arkansas.

GEOLOGY
Section Chairman: Walter Manger

STRATIGRAPHY OF THE BRENTWOOD AND WOOLSEY MEMBERS, BLOYD FORMATION (TYPE MORROWAN), NORTHWESTERN ARKANSAS.
Thomas A. McGilvery and Charles F. Berlau, Department of Geology, University of Arkansas at Fayetteville.

CARBONATE PETROGRAPHY OF THE BRENTWOOD MEMBER, BLOYD FORMATION (TYPE MORROWAN), NORTHWESTERN ARKANSAS.
Charles E. Berlau and Thomas A. McGilvery, Department of Geology, University of Arkansas at Fayetteville.

THICKNESS AND AERAL EXTENT OF THE CHATTANOOGA SHALE IN ARKANSAS, OKLAHOMA AND MISSOURI.
Steven H. Terry, Department of Geology, University of Arkansas at Fayetteville.

ANATOMY OF A FLUVIAL SHEET SANDSTONE, NORTHWEST ARKANSAS.
R. Keith Crowder, Department of Geology, University of Arkansas at Fayetteville.

MAGNETIC INTENSITY AND BOUGUER GRAVITY OF THE CENTRAL ARKOMA BASIN OF ARKANSAS.
John H. McBride, Department of Geology, University of Arkansas at Fayetteville.

MERCURY IN WATERS OF NORTHWEST ARKANSAS, SOUTHWEST MISSOURI, AND NORTHEAST OKLAHOMA.
Larry Barber II and Kenneth F. Steele, Department of Geology, University at Fayetteville.

SURFACE AND SUBSURFACE TEMPERATURES (SILICA THERMOMETRY) OF THE OUACHITA MOUNTAINS SPRING WATERS.
George H. Wagner and Kenneth F. Steele, Department of Geology, University of Arkansas at Fayetteville and John B. Sharp, Phillips Coal Company, Woodgate Office Park, Suite 200, 1121 E. Southeast Loop 323, Tyler, Texas 75703.

INVERTEBRATE ZOOLOGY
Section Chairman: Robert Watson

*A CHECKLIST OF THE RECENT MOLLUSCA OF ARKANSAS.
Mark E. Gordon, Department of Zoology, University of Arkansas at Fayetteville.

*SIGNIFICANT ADDITIONS TO THE MOLLUSCAN FAUNA OF THE ILLINOIS RIVER, ARKANSAS.
Mark E. Gordon and Arthur V. Brown, Department of Zoology, University of Arkansas at Fayetteville.

A STUDY OF THE ANATOMY OF THE ALIMENTARY CANAL OF *BROCHYMENA QUADRIPUSTULATA* (HEMIPTERA: PENTATOMIDAE).
Dan T. Barber, Lynita M. Cooksey and David H. Abell, Department of Biological Sciences, Arkansas State University, State University, Arkansas.

OBSERVATIONS ON THE INCIDENCE OF CHIGGERS, *EUTROMBICULA ALFREDDUGESI* (OUDEMANS) ON CROTAPHYTUS (SAURIA: IGUANIDAE) IN IZARD COUNTY, ARKANSAS.
Chris T. McAllister, Department of Biological Sciences, Arkansas State University, State University, Arkansas.

A CONTINUATION OF SPIDER RESEARCH IN ARKANSAS: GULF COASTAL PLAINS.
Peggy Rae Dorris, Department of Biology, Henderson State University at Arkadelphia.

HETEROCHROMATIC PATTERNS IN *DROSOPHILIA VIRILIS* INTERPHASE NUCLEI.
William C. Guest, Department of Zoology, University of Arkansas at Fayetteville.

SOME EFFECTS OF METHYL GREEN ON EXPRESSION OF DAMAGE INDUCED IN G_1 XENOPUS CELLS BY ULTRAVIOLET LIGHT.
Keith Mathias and Gaston Griggs, John Brown University at Siloam Springs.

THE EFFECT OF SANGINARINE ON SODIUM-POTASSIUM ACTIVATED ADENOSINE TRIPHOSPHATASE FROM FROG SKIN.
James R. Nichols and K. D. Straub, Department of Biology, University of Central Arkansas at Conway, and Medical Research Service, VA Hospital, Departments of Biochemistry and Medicine, University of Arkansas for Medical Sciences at Little Rock.

VERTEBRATE ZOOLOGY
Section Chairman: Dennis Baeyens

A CHECKLIST AND KEY TO THE AMPHIBIANS OF ARKANSAS.
James M. Walker and Robert Brewer, Department of Zoology, University of Arkansas at Fayetteville.

A CHECKLIST AND KEY TO THE REPTILES OF ARKANSAS.
James M. Walker and Robert Brewer, Department of Zoology, University of Arkansas at Fayetteville.

HERPTOFAUNA ON THE RED RIVER AND ITS OXBOWS: FOUR COUNTIES OF SOUTHWEST ARKANSAS.
Sandra K. Ball and Peggy R. Dorris, Department of Biological Sciences, Henderson State University at Arkadelphia.

PARAMETERS OF FOOD AND HABITAT PARTITIONING IN A COMMUNITY OF SYMPATRIC INSECTIVOROUS BATS.
Ken N. Paige and V. Rick McDaniel, Department of Biological Sciences, Arkansas State University.

THE PRESENCE OF *HAEMOGREGARIANA* (PROTOZOA: SPOROZOA) IN THE RED-EARED SLIDER, *CHRYSEMYS SCRIPTA ELEGANS* (Wied) from Lonoke County, Arkansas.
Chris T. McAllister and Anthony W. King, Department of Biological Sciences, Arkansas State University and James J. Daly, Department of Microbiology and Immunology, University of Arkansas for Medical Sciences at Little Rock.

SEXUAL DIETARY DIFFERENCES IN A POPULATION OF *TRIONYX MUTICUS* (REPTILIA: TESTUDINES).
Michael V. Plummer and David B. Farrar, Department of Biology, Harding University at Searcy and Department of Entomology, University of Kansas at Lawrence, Kansas.

EVAPORATIVE WATER LOSS IN *OPHEODRYS AESTIVUS* WITH A COMPARISON TO *O. VERNALIS*.
L. A. Bell, D. A. Baeyens and M. V. Plummer, Department of Biology, Harding University at Searcy and Department of Biology, University of Arkansas at Little Rock.

*OVERWINTERING HELMINTHS OF THE COMMON MALLARD, *ANAS PLATYRHYNCHOS PLATYRHYNCHOS*, IN ARKANSAS.
Mary Elizabeth McKenzie, Department of Biology, Hendrix College at Conway.

*RECENT INVESTIGATIONS OF *ACUARIA* (CHEILOSPIRURA) (NEMATODA: SPIRURATA: ACUARIIDAE) IN THE COMMON GRACKLE *(QUISCALUS QUISCULA)* IN ARKANSAS.
Ann O. Black and Arthur A. Johnson, Hendrix College at Conway.

SAGE THRASHER, *OREOSCOPTES MONTANUS*, A NEW SPECIES FOR ARKANSAS.
Norman Lavers, Department of English, Arkansas State University.

GROWTH PATTERNS, BEHAVIOR AND FOOD ITEMS FED TO NESTLING GREAT HORNED OWLS *(BUBO VIRGINIANUS)*.
Rodney Harris and Earl Hanebrink, Department of Biological Sciences, Arkansas State University.

SUCCESS OF NATIVE-TRAPPED COMPARED TO CAPTIVITY-RAISED BIRDS IN RESTORING WILD TURKEY POPULATIONS TO NORTHWESTERN ARKANSAS.
Douglas James, L. Glen Fooks and John R. Preston, University of Arkansas at Fayetteville, Southern Baptist College at Walnut Ridge, and Oklahoma City Zoo at Oklahoma City, Oklahoma.

ECOLOGICAL OBSERVATIONS OF THE EASTERN COLLARED LIZARD, *CROTAPHYTUS COLLARIS COLLARIS* (SAY) IN NORTH-CENTRAL ARKANSAS, WITH COMMENTS ON SOCIAL BEHAVIOR.
Chris T. McAllister, Arkansas State University.

A HAND-HELD BROADBAND ULTRASONIC DETECTOR FOR MONITORING BAT CRIES IN THE FIELD.
Ken N. Paige and Lawrence A. Mink, Department of Biological Sciences and Department of Mathematics and Physics, Arkansas State University.

PROFILE OF THE STRIPED SKUNK RABIES EPIDEMIC IN ARKANSAS.
Gary A. Heidt, James Lammers, and Dale V. Ferguson, Department of Biology, University of Arkansas at Little Rock.

DISEASE PROFILE OF STRIPED SKUNKS *(MEPHITIS MEPHITIS)* FROM A PUBLIC USE AREA.
Dale V. Ferguson, Robin G. Heidt and Gary A. Heidt, Department of Biology, University of Arkansas at Little Rock.

WILDLIFE HABITAT MANAGEMENT ON THE OUACHITA NATIONAL FOREST.
David A. Saugey, U.S. Forest Service, Ouachita National Forest at Hot Springs.

AQUATIC ENVIRONMENT II
Section Chairman: John K. Beadles

IMPLICATIONS AND CONSIDERATIONS CONCERNING THE STATUS, HABITAT, AND DISTRIBUTION OF THE LEAST BROOK LAMPREY, *LAMPETRA AEPYPTERA* (ABBOT) PISCES: PETROMYZONTIDAE) IN ARKANSAS, BASED ON RECENT RECORDS.
S. A. Sewell, F. A. Carter and C. T. McAllister, Arkansas State University, State University, Arkansas.

THE SYSTEMATIC STATUS OF THE FISHES OF GENUS *CAMPOSTOMA* (CYPRINIDAE) INHABITING THE MAJOR DRAINAGES OF NORTHERN ARKANSAS.
S. A. Sewell, J. K. Beadle and V. R. McDaniel, Arkansas State University, State University, Arkansas.

THE MAYFLIES OF NORTHEAST ARKANSAS.
Nelson A. Childers and George L. Harp, Arkansas State University, State University, Arkansas.

BENTHIC COMMUNITY STRUCTURE, THE ENDANGERED SPECIES LAW AND THE NEW WHITE RIVER BRIDGE AT ST. CHARLES, ARKANSAS.
Louise R. Karemer, Mark Gordon and Edgar Short, University of Arkansas at Fayetteville.

AN INVENTORY OF THE DECAPOD CRUSTACEANS (CRAYFISH AND SHRIMPS) OF ARKANSAS, WITH A DISCUSSION OF THEIR GENERAL HABITATS.
Raymond W. Bouchard and Henry W. Robison, Southern Arkansas University, Magnolia, Arkansas.

THE AQUATIC MACROINVERTEBRATES OF WAPANOCCA NATIONAL WILDLIFE REFUGE.
George L. Harp and Phoebe A. Harp, Arkansas State University, State University, Arkansas.

THE FISHES AT ROCK CREEK, SHARP COUNTY, ARKANSAS.
F. Allen Carter and J. K. Beadles, Arkansas State University, State University, Arkansas.

THE WATER STRIDERS (HEMIPTERA: GERRIDAE) OF ARKANSAS.
Paul D. Kittle, University of North Alabama, Florence, Alabama.

AN INVESTIGATION OF THE STREAM BED OXYGEN DEMAND OF FOURCHE CREEK, PULASKI COUNTY, ARKANSAS.
Patrick Edelmann and John D. Rickett, University of Arkansas at Little Rock.

MIXING IN DARDANELLE LAKE: CONCENTRATIONS OF SELECTED CATIONS.
D. M. Chittenden II, Arkansas State University, State University, Arkansas.

DARDANELLE LAKE: A SOLUTION APPROACHING EQUILIBRIUM.
D. M. Chittenden II, Arkansas State University, State University, Arkansas.

THE EFFECTS OF STRATIFICATION ON LAKE FRIERSON.
Larry W. Dorman and John K. Beadles, Arkansas State University, State University, Arkansas.

HYDROGEOLOGY
Section Chairman: Albert Ogden

A PRELIMINARY INVESTIGATION OF RURAL USE AQUIFERS OF NORTHERN SEARCY COUNTY, ARKANSAS.
Wyndal M. Goodman and Albert E. Ogden, Department of Geology, University of Arkansas at Fayetteville.

A PRELIMINARY INVESTIGATION OF THE GROUND-WATER RESOURCES OF BAXTER COUNTY, ARKANSAS.
Michael F. Liebelt and Albert E. Ogden, Department of Geology, University of Arkansas at Fayetteville.

A PRELIMINARY INVESTIGATION OF THE GROUND-WATER RESOURCES OF SHARP, FULTON, AND IZARD COUNTIES, ARKANSAS.
Gerald W. Lundy and Albert E. Ogden, Department of Geology, University of Arkansas at Fayetteville.

CONTAMINATION OF BOONE-ST. JOE LIMESTONE GROUNDWATER BY SEPTIC TANKS AND CHICKEN HOUSES.
Gerald D. Cox and Albert E. Ogden, Department of Geology, University of Arkansas at Fayetteville.

USE OF THE TRI-POTENTIAL METHOD OF RESISTIVITY IN LOCATING CAVES, FRACTURES AND FAULTS.
Paul S. Eddy, Jr., and Albert E. Ogden, Department of Geology, University of Arkansas at Fayetteville.

PSYCHOLOGY
Section Chairman: Chris Spatz

*EFFECTS OF BACKGROUND MUSIC: TWO REPLICATIONS OF MAY AND HAMILTON (1977).
Diane Wimberley and Kathy Gladstone, Hendrix College at Conway.

*A METHOD FOR PLACING A CAMMULA IN THE COMMON CAROTID ARTERY OF THE ADULT RAT: A CHRONIC PREPARATION.
Tom Wilhite, Hendrix College at Conway.

REWARD SEQUENCE AND AVERAGE REWARD AMOUNT AS DETERMINANTS OF RESPONSE PERSISTENCE TO THE NEGATIVE STIMULUS IN DISCRIMINATION LEARNING.
Steven J. Haggbloom, Department of Counselor Education and Psychology, Arkansas State University.

INFLUENCE OF GENDER APPROPRIATENESS OF SEX-ROLE AND OCCUPATIONAL PREFERENCES ON EVALUATIONS OF A COMPETENT PERSON.
Robert D. Johnson, Department of Psychology, Arkansas State University and David R. Shaffer, Department of Psychology, University of Georgia at Athens, Georgia.

EFFECTS OF PRECEDING REINFORCEMENT MAGNITUDE ON FIXED-INTERVAL PERFORMANCE IN PIGEONS.
Lynn Howerton, Department of Counselor Education and Psychology, Arkansas State University.

THE RELATIVE BEHAVIORAL CONTROL EXERCISED BY INTERNAL REWARD-PRODUCED STIMULI AND EXTERNAL STIMULI IN RATS' DISCRIMINATION LEARNING.
David J. Tillman and Steven J. Haggbloom, Department of Counselor Education and Psychology, Arkansas State University.

BIOMEDICAL SCIENCE
Section Co-Chairmen: John E. Pauly and Lawrence E. Scheving

SPECIES DIFFERENCES IN NA,K-ATPASE INHIBITORY ACTIONS AND POSITIVE INOTROPIC EFFECTS OF SANGUANARINE.
R. Kirk Riemer, Ernest Seifen and Robert J. Adams, Department of Pharmacology, College of Medicine, University of Arkansas for Medical Sciences, Little Rock, Arkansas 72205.

ALTERATIONS OF VENTRICULAR β-ADRENERGIC AND H_1-HISTAMINERGIC RECEPTORS IN GUINEA PIGS ADAPTED TO SIMULATED HIGH ALTITUDE.
Kim F. Light, College of Pharmacy, University of Arkansas for Medical Sciences, Little Rock, Arkansas 72205.

EVIDENCE FOR 1,25DIHYDROXYCHOLECALCIFEROL (1,25DHCC) MODULATION OF PARATHYROID GLAND METABOLISM STUDIED *IN VITRO*.
William Y. W. Au, Jeanne A. Murphy and Richard F. Williams, Departments of Pharmacology and Medicine, College of Medicine, University of Arkansas for Medical Sciences and VA Medical Center, Little Rock, Arkansas 72201.

LOCATION AND ACTIVATION OF LONG DESCENDING PROPRIOSPINAL NEURONS IN CAT SPINAL CORD.
Robert J. Adams, Robert D. Skinner and Ronald S. Remmel, Departments of Anatomy and Physiology, College of Medicine, University of Arkansas for Medical Sciences, Little Rock, Arkansas 72205.

CONNECTIONS OF THE MESENCEPHALIC LOCOMOTOR REGION (MLR).
E. Garcia-Rill, R. D. Skinner and S. A. Gilmore, Department of Anatomy, College of Medicine, University of Arkansas for Medical Sciences, Little Rock, Arkansas 72205.

HOW WE LOOK: STUDIES OF OCULOMOTOR-SYSTEM NEURAL CONNECTIONS.
Ronald S. Remmel and Robert D. Skinner, Departments of Physiology and Anatomy, College of Medicine, University of Arkansas for Medical Sciences, Little Rock, Arkansas 72205.

SOME NEUROCHEMICAL CHARACTERISTICS OF THE GENETICALLY NERVOUS DOG.
Donald C. De Luca, Charles Angel and Letha H. Couch, Department of Biochemistry, University of Arkansas for Medical Sciences, Little Rock, Arkansas 72205.

NEUROTOXIC EFFECTS OF METHYLMERCURY ON DORSAL ROOT GANGLIA.
Rick Y. Yip and Louis W. Chang, Department of Pathology, College of Medicine, University of Arkansas for Medical Sciences, Little Rock, Arkansas 72205.

TETRAETHYLLEAD (TEL) INDUCED ULTRASTRUCTURAL CHANGES IN THE KIDNEY.
Paul R. Wade, Victoria L. Wade, Joyce L. Lillo and Louis W. Chang, Department of Pathology, College of Medicine, University of Arkansas for Medical Sciences, Little Rock, Arkansas 72205.

THE EFFECT OF COLD SHOCK ON THE METABOLISM OF *TRICHOMONAS GALLINAE*.
James J. Daly, Department of Microbiology and Immunology, College of Medicine, University of Arkansas for Medical Sciences, Little Rock, Arkansas 72205.

THE DISTRIBUTION OF *NAEGLERIA FOWLERI* IN SELECTED NORTHEAST ARKANSAS LAKES.
Robert D. Evans and Lawrence W. Hinck, Department of Biological Sciences, Arkansas State University, State University, Arkansas 72467.

IMMUNE RESPONSES OF RATS TO ANTIGENS OF MOLONEY LEUKEMIA VIRUS (MULV).
Frances B. Soderberg, Susan G. Tai and Joe M. Jones, Department of Pathology, College of Medicine, University of Arkansas for Medical Sciences, Little Rock, Arkansas 72205.

ZINC CONCENTRATION IN TISSUES OF ETHANOL PREFERRING AND NON-PREFERRING MICE.
Richard E. Stull and James N. Pasley, Department of Biopharmaceutical Sciences, College of Pharmacy, and Department of Physiology and Biophysics, College of Medicine, University of Arkansas for Medical Sciences, Little Rock, Arkansas 72205.

EFFECTS OF CHRONIC ACTH INJECTIONS ON ETHANOL SELECTION IN INTACT AND ADRENALECTOMIZED MICE.
M. J. Kassam and J. N. Pasley, Department of Physiology and Biophysics, College of Medicine, University of Arkansas for Medical Sciences, Little Rock, Arkansas 72205.

THE RESPONSE OF RHESUS MONKEYS TO CHOLESTEROL FEEDING.

Manford D. Morris and Charles A. Nelson, Departments of Pediatrics and Biochemistry, College of Medicine, University of Arkansas for Medical Sciences, Little Rock, Arkansas 72205.

INCIDENCE OF HYPERPROLACTINEMIA IN MALE GERIATRIC PATIENTS.

Joseph W. Kittinger, Peter O. Kohler and Louis R. Pryor, Department of Medicine, College of Medicine, University of Arkansas for Medical Sciences, Little Rock, Arkansas 72205.

Arkansas Collegiate Academy of Science

MINUTES OF THE BUSINESS MEETING, 28 MARCH 1980

The meeting was called to order at 11:04 A.M. The following persons were present:

From Harding University — Frank Brown, Pam Brown
From Hendrix University — Ann Black, Beth McKenzie, Jane Spradley
From College of the Ozarks — James Briggs
Professors — Ron Doran, Dr. James Mackey, Dr. E. W. Wilson, Jr.

The president, Frank Brown, handed out copies of the constitution and discussed the section about officer selection. It was noted that the president and president-elect may not be from the same school. It was also noted that the president chooses the secretary. It was recommended that the treasurer of the Senior Academy keep the money for the Collegiate Academy because of some problems with Worthen Bank. Pam Brown made the motion that we elect no treasurer this year, but retain the right to do so in later years if members feel it would be useful. Jane Spradley seconded the motion, and it was accepted unanimously.

Nominations were opened for the office of president-elect. James Briggs was nominated and elected unanimously. He suggested Dr. John F. Bridgeman as sponsor.

Dr. E. W. Wilson, Jr. suggested that Jane Spradley give a report at the Senior Academy meeting.

Jane Spradley moved that we accept the constitution handed out at the beginning of the meeting as the official constitution. James Briggs seconded the motion. All present were in favor of the motion.

Frank Brown handed the presidency over to Jane Spradley. Jane introduced herself and there was some discussion about increasing the activities of the Collegiate Academy. Jane said she would name her secretary and sponsor after talking with the people she had in mind.

Frank Brown motioned to adjourn the meeting. James Briggs seconded the motion. All were in favor. The meeting was adjourned at 11:30 A.M.

Respectfully Submitted,

Pam Brown
Secretary
Arkansas Collegiate Academy
1979-80

ABSTRACTS OF PAPERS PRESENTED BY COLLEGIATE ACADEMY MEMBERS

Editor's Note: Not included in the following abstracts are those of Mark E. Gordon, whose papers were accepted for publication and are presented elsewhere. Titles of papers presented by Collegiate Academy members are identified in the preceding Section Programs by *

EVAPORATIVE WATER LOSS IN *OPHEODRYS AESTIVUS* WITH A COMPARISON TO *O. VERNALIS*.

L. A. Bell, D. A. Baeyens, and M. V. Plummer. Department of Biology, Harding University, Searcy, Arkansas 72143 and Department of Biology, University of Arkansas at Little Rock (D.A.B.), Little Rock, Arkansas 72204.

Previous studies of cutaneous water loss in terrestrial and fossorial reptiles have shown lower rates in forms from xeric habitats than in forms from mesic habitats. We hypothesize that arboreal forms may be adapted to lose less water than a comparative terrestrial form because of the large surface area that is continuously exposed to desiccating air currents. We compared rates of water loss of *Opheodrys aestivus* (arboreal) with that of *O. vernalis* (terrestrial) in a dry air flowing chamber. Adult *O. vernalis* lost statistically more water than adult *O. aestivus*. However, rate of water loss in *O. aestivus* was highly dependent upon body size. We were unable to determine body size relationships for *O. vernalis* because of a small sample size. We conclude that in order to adequately make interspecific comparisons one must compare regression equations of water loss on body size and not simply means as has been done in the literature. Despite this restriction *O. aestivus* appears to lose less water than many snakes except for forms adapted for extreme aridity and for the vipers. This low rate may be an adaptation for arboreality.

RECENT INVESTIGATIONS OF *ACUARIA (CHELILOSPIRURA)* (NEMATODA: SPIRURATA: ACUARIIDAE) IN THE COMMON GRACKLES *QUISCALUS QUISCULA* IN ARKANSAS.

Ann O. Black and Arthur A. Johnson, Dept. of Biology, Hendrix College, Conway, Arkansas 72032.

Gizzards of 50 (25 male, 25 female) wintering common grackles in Arkansas yielded 51 nematodes of the Genus *Acuaria (Cheilospirura)*. The nematodes were found in small numbers immediately under the cornified layer of the gizzard. Female hosts were more frequently infected than the male hosts. The sex ration of the parasite was the same for both sexes of host. This is the first report of the Genus *Acuaria* in common grackles in the central United States. A description of the parasite and its bionomics are discussed.

THE CRYSTAL AND MOLECULAR STRUCTURE OF TRANS-TRANS-μ-CHLORO-μ-PYRAZOLATODICHLORO-BIS-(ETHYLENE) DIPLATINUM (II), Cl (C_2H_4) Pt (μ-Cl) (μ-$C_3N_2H_3$) Pt (c_2H_4) Cl.

A. W. Cordes, W. C. Deese, D. A. Johnson, Dept. of Chemistry, University of Arkansas at Fayetteville, 72701.

The pyrazole molecule is an extremely versatile ligand binding as a neutral monohapto, anionic monohapto, and anionic dihapto bridging group in various complexes. Complexes containing a single 1,2-dihapto pyrazolide ligand are relatively rare; however, the title complex which is obtained as one of the products of the reaction of Zeise's anion ($PtCl_3C_2H_3$) with pyrazole in aqueous solution contains a single bridging azaromatic anion.

The title complex crystallizes in the $P2_1/n$ space group. The unit cell contains four molecules and has dimensions a = 8.099 Å, b = 17.189 Å, c = 9.895 Å and $\beta = 116.86°$. Manual diffractometer data for 1198 independent reflections was refined by full matrix least squares methods to an R = 0.050. Exclusive of the ethylene moities, the molecule is nearly planar; for example, the dihedral angle between the two PCl_2N coordination planes is 172°. The platinum-platinum distance within a single molecule is 3.717 Å with platinum-platinum contacts between neighboring molecules at 4.027 and 4.232 Å.

OVERWINTERING HELMINTHS OF THE COMMON MALLARD, *ANAS PLATYRHYNCHOS PLATYRHYNCHOS*, IN ARKANSAS.

Mary Elizabeth McKenzie, Dept. of Biology, Hendrix College, Conway, Arkansas 72032.

Twenty one male and 19 female common mallards, *Anas platyrhynchos platyrhynchos*, were collected from two locations in Arkansas during the period between 13 December, 1979 and 29 February, 1980. Birds were dispatched and the viscera were immediately examined. Fourteen genera of helminths were found (four cestodes, five trematodes and five nematodes). Parameters for statistical analysis involve host sex, weight, and flock. Helminth distribution in the host was recorded by organ system, organ, and organ part. The prevalence of parasites, infection intensity, and numbers of species of helminths per host were noted.

SYNTHESIS OF N-SUBSTITUTED ANALOGS OF ACYCLIC NARCOTIC ANALGESICS AS NARCOTIC ANTAGONISTS.

J. B. Richardson, P. K. Raible, D. L. Green, and D. L. Lattin, Dept. of Biopharmaceutical Sciences, College of Pharmacy, University of Arkansas for Medical Sciences, Little Rock, Arkansas 72205.

It is well established that potent narcotic antagonists can be prepared by substituting allyl or cyclopropylmethyl alkyl groups for the methyl groups on the tertiary nitrogen of many narcotic analgesics. This structural modification is effective when using narcotic analgesics derived from morphine, morphinan, and benzomorphan. In an effort to prepare acyclic narcotic antagonists, we have synthesized analogs of acetylmethadol and methadol possessing the same structural modifications. The allyl and cycloprophylmethyl alkyl groups are substituted for one of the methyl groups on the tertiary nitrogen. The synthesis of these compounds, and preparation of salts suitable for pharmacological testing, will be discussed.

SYNTHESIS OF PENTAPEPTIDES AS MORPHINE AGONISTS AND ANTAGONSISTS.

K. Lee Robinson, Lyle Van Arsdale and A. Nelson Voldeng, College of Pharmacy, University of Arkansas for Medical Sciences, Little Rock, Arkansas 72205.

Enkephalins are endogenous peptides composed of five amino acids (Met^5-enkephalin = tyr-gly-gly-phe-met) and have been shown to elicit brief, but remarkable opiate-like analgesic activity when tested in laboratory animals. Comparison of the conformations of the enkephalins with the rigid structure of morphine have been reported by several groups in an attempt to define the features of the brain's opiate receptors which modulate pain perception. Unfortunately the proposed enkephalin conformations do not satisfy many of the proposed pictures of the opiate receptors, nor do they explain the basis for opiate antagonism exhibited by certain morphine derivatives. Discussion will include rationale for synthesis of specific enkephalin derivatives which more closely conform to the structure of morphine, will be longer acting than the naturally occurring enkephalins, will be effective when administered orally, and synthetic procedures utilized to prepare these opiate agonists-antagonists.

A METHOD FOR PLACING A CANNULA IN THE COMMON CAROTID ARTERY OF THE ADULT RAT: A CHRONIC PREPARATION.

Tom Wilhite, Dept. of Psychology, Hendrix College, Conway, Arkansas 72032.

A method is described for the chronic cannulation of the right common carotid artery of the rat. An 8-inch length of size 20 polyethylene tubing is cut to a sharp point at one end. A 10-inch length of surgical silk is attached to the cannula with dental cement, approximately ¾ inch from the point. The animal is anesthetized, and the initial incision is made between the jaw and the shoulder, on the right side. Beneath the fascia, and beneath the overlapping region of the sternohyoid and sternomastoid muscle groups lies the carotid sheath. After the muscle groups are separated, the sheath is carefully pulled apart to reveal the nerves and vessels within. The carotid artery, the largest of the visible vessels, is isolated. After the artery is ligated posteriorly and clamped anteriorly, a small horizontal cut is made. The prepared cannula is inserted into the opening one-half inch. The thread attached to the cannula is then sutured into the surrounding muscles. An incision is made between the scapulae and the free end of the cannula exits there.

Such a cannula will allow the transfusion of blood into the primary supply to the brain. A later experiment will test the hypothesis that transfused blood from a satiated animal will act as a reinforcer for a hungry one.

EFFECTS OF BACKGROUND MUSIC: TWO REPLICATIONS OF MAY AND HAMILTON (1977).

Diane Wimberly and Kathy Gladstone, Dept. of Psychology, Hendrix College, Conway, Arkansas 72032.

May and Hamilton (1977) studied the unconscious effects of music on 30 females who were asked to evaluate either an attractive or an unattractive male stimulus photograph. The three levels of the independent variable were rock, avant-guard, and no music. It was hypothesized that significantly better ratings would occur under the rock music condition. Statistical tests supported this conclusion. In 1979, McKenna et al. did a study in which the unconscious effects of rock, free-form jazz, country, and classical music on stimulus photograph ratings were studied. They found no significant differences in the ratings assigned by 60 subjects on attractiveness, general intelligence, morality, knowledge of current events, and likeableness assigned to the photographs under the various music conditions. However, there was a decided tendency for ratings to be higher under music conditions than when no music was present. The insights and ideas obtained from the McKenna et al. experiment composed the basis for a third study (Wimberly and Gladstone, 1980). In this study, 41 species rated two photographs (one male and one female) under four different conditions: rock, country, classical, and control. The stimulus photographs were rated on attractiveness, general intelligence, morality, knowledge of current events, and likeableness on a 7 point Likert scale. No significant difference was found but the tendency for higher ratings to be assigned under the music conditions was, again, present. Final analysis combining the two experiments showed that the ratings with music indeed produced higher ratings.